



# RAILROAD COMMISSION OF TEXAS

## HEARINGS DIVISION

**RULE 37 CASE NO. 0281088**  
**STATUS NO. 746551**  
**DISTRICT 05**

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**TO CONSIDER THE APPLICATION OF CHESAPEAKE OPERATING, INC. FOR A  
RULE 37 EXCEPTION, CANUCKS LEASE, WELL NO. 3H, NEWARK, EAST  
(BARNETT SHALE) FIELD, TARRANT COUNTY, TEXAS**

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**HEARD BY:** Laura E. Miles-Valdez - Legal Examiner  
Paul Dubois - Technical Examiner

### PROPOSAL FOR DECISION

### PROCEDURAL HISTORY

APPLICATION FILED:	April 11, 2013
NOTICE OF HEARING:	June 16, 2013
HEARING DATE :	August 21, 2013
PFD CIRCULATION DATE:	June 9, 2014

### APPEARANCES:

#### FOR APPLICANT:

Glenn E. Johnson, Attorney  
Will Jordan, Attorney  
David Triana, P.E.  
Bill G. Spencer, Regulatory Consultant  
Melissa Condley, Reservoir Engineer

#### APPLICANT:

Chesapeake Operating, Inc.

#### FOR PROTESTANTS:

Dennis Miller  
Kenneth Meisner  
Mark Hixson

#### REPRESENTING:

Himself  
Himself, Tarrant Properties and 40 other parties  
Himself and 40 other parties

## STATEMENT OF THE CASE

### STATEMENT OF THE CASE

Chesapeake Operating, Inc. ("Chesapeake" or "Applicant"), seeks to amend its drilling permit pursuant to the provisions of Statewide Rule 37 for the Canucks Lease, Well No. 3H, (a horizontal well) in the Newark, East (Barnett Shale) Field, Tarrant County, Texas. The present application is Chesapeake's fourth amended permit for the Canucks Lease, Well No. 3H. Chesapeake, on August 20, 2013, filed the most recent updated Form P-12, a certificate of pooling authority, for the Canucks Lease showing that 285.713 acres of the 304.345-acre Canucks Lease unit (i.e. 93.9%) is leased by Chesapeake. Chesapeake has three wells currently drilled on the unit.

The surface location of Well No. 3H is 329 feet from the north (off lease) line and 904 feet from the east (off lease) line and 329 feet from the north line and 904 feet from the east line of the R. Collins Survey. The penetration point is 236 feet from the south lease line and 331 feet from the northwest lease line. The terminus is line 153 feet from the southwest line and 277 feet from the east line of lease and 617 feet from the north line and 1981 feet from the east line of the Jennings, SG Survey. The lateral runs on an NW-SE trend. The well was proposed to be drilled at an approximate depth of 9000 feet.

Special gas field rules for the Newark, East (Barnett Shale) Field provide for 330 feet from the nearest leaseline and zero (0) between wells on the same lease in the same field and reservoir on 320 acre proration units, with optional 20 acre units. As to horizontal wells, where the horizontal portion of the well is cased and cemented back above the top of the Barnett Shale formation, the distance to any property line, leaseline, or subdivision line is calculated based on the distance to the nearest perforation point in the well, and not based on the penetration point or terminus. Where an external casing packer is placed in a horizontal well and cement is pumped above the external casing packer to a depth above the top of the Barnett Shale formation, the distance to any property line, leaseline, or subdivision line is calculated based on the top of the external casing packer or the closest open hole section in the Barnett Shale. The standard drilling and proration unit for the Newark, East (Barnett Shale) Field is 320 acres. An operator is permitted to form optional drilling units of 20 acres.

Chesapeake contends that a Rule 37 exception is needed for the drilled Canucks Lease, Well No. 3H, because the section of the well proposed to be perforated is closer than 330 feet to the boundary of tracts which are internal to the unit and unleased. Mr. Dennis Miller presented a statement in his own behalf as the owner of unleased property located along wellbore of the drilled Well 3H, located at 6900 Meadowbrook Drive. Messrs. Kenneth Meisner and Mark Hixson, appeared at the hearing in protest representing themselves, as well as representing forty unleased land owners.

**DISCUSSION OF THE EVIDENCE**

**CHESAPEAKE OPERATING, INC.**

The present application is Chesapeake's fourth amended permit for the Canucks Lease, Well No. 3H. The first application was filed on August 16, 2012, Chesapeake sought the initial drilling permit for the Canucks 3H well on 276.651 leased acres in a 304.345-acre unit. The drilling permit was for a long lateral/short perf and was approved administratively on August 23, 2012. The plat associated with that application is attached to this proposal for decision as Exhibit I, which is incorporated herein by reference. Chesapeake stated this application was necessary to begin the permitting process with the City of Fort Worth.

An amended application for Well No. 3H was filed on February 25, 2013, which amended the unit to include newly added acreage to the pooled unit (consisting of 283.45 acres) and amended the wellbore by extending the lateral. This amended application also imposed NPZ's which covered unleased tracts as well as any non-regular drilling location within 330 feet from the leased unit. The February 25, 2013 amended permit was administratively approved on March 1, 2013.

On March 8, 2013, Chesapeake submitted a second amended drilling permit seeking to amend the lateral and remove the NPZ's imposed on the previous permit. This drilling permit was protested by unleased mineral interest owners. Chesapeake later updated the NPZ's and amended the plat associated with this amended permit. This amended permit was administratively approved on April 11, 2013.

On April 11, 2013, Chesapeake submitted a third amended drilling permit seeking to remove the NPZ's required in the permit and a Rule 37 exception. This third amended permit is the subject of the current hearing. On April 9, 2013, an updated Form P-12, for the Canucks Lease showing that 284.197 acres of the 304.345-acre Canucks Lease unit (i.e. 93.4%) is leased by Chesapeake. Then, on August 20, 2013, Chesapeake filed the latest amended P-12, showing that 285.713 acres are leased by Chesapeake and therefore, holds leases on 93.9% of the Canucks Lease unit. Further, Chesapeake has three wells currently drilled on the 304.345-acre Canucks Lease unit; 285.713 acres of the unit are leased by Chesapeake. The subject well has been drilled, and testimony presented indicated that the subject well had not been completed at the time of the hearing.

An isopach map derived from the logs of nearby wells indicates the Barnett Shale is roughly 340 feet thick under the Canucks Lease. Devon Energy Production Co., LLP conducted a study of the Tarrant/Denton/Wise County area which calculated total gas in place at 139 BCF per square mile in those counties, based on an average formation thickness of 433 feet. Using that study, and correcting for the thickness of the Newark, East (Barnett Shale) Field under the Canucks Lease and the leased acreage, Chesapeake calculated the original gas in place in the 285.713 leased acres of the Canucks Lease. Assuming a recovery factor of 46%, Chesapeake calculates there is 22.414 BCF of

recoverable gas beneath the Canucks Lease.

Chesapeake reviewed the Newark, East (Barnett Shale) Field wells within a 3-mile radius of the well, and found 108 wells within that radius. Plotting the estimated ultimate recovery ("EUR") of each of the wells, Chesapeake developed a scatter diagram and used a "least squares regression" method to produce a trend line to predict the ultimate recovery of a well in the area based on its length. Based on the scatter diagram, with the drainhole length as the "x" axis and the estimated EUR in MMCF as the "y" axis, Chesapeake derived a well recovery formula of  $y = 0.917x + 849.3$ . This indicates that each incremental foot of horizontal wellbore will recover an additional 917 MCF of gas, while a purely vertical well would recover approximately 850 MMCF. Thus, Chesapeake calculates its proposed full-length lateral of 5313 feet will recover 5.721 BCF of gas.

Currently, the 1835-foot wellbore lateral available for perforation would recover 2.532 BCF of gas, leaving 3.189 BCF unrecovered. Chesapeake argues that 3.189 BCF of gas is a significant quantity of hydrocarbons. Chesapeake contends that leaving the NPZ's which cover the protestant, Mr. Miller's unleased tract, would leave Chesapeake with a wellbore of 4625 feet and an EUR of 5.090 BCF. A 4625 foot wellbore would leave 0.631 BCF unrecovered. Chesapeake argues that 0.631 BCF of gas is a significant quantity of hydrocarbons. Chesapeake contends that leaving the NPZ's which cover the Protestants Meisner and Hixson, and their constituents's unleased tracts, would leave Chesapeake with a wellbore limited to 2022 feet and an EUR of 2.703 BCF. A 2022 foot wellbore would leave 3.018 BCF unrecovered. Chesapeake argues that 3.018 BCF of gas is a significant quantity of hydrocarbons. Chesapeake contends that failure to remove the current NPZ would deprive Chesapeake and its lessors of the opportunity to produce their fair share of the recoverable hydrocarbons in place beneath the 285.713 leased acres of the Canucks Lease, resulting in confiscation.

#### **PROTESTANTS' POSITION AND EVIDENCE**

Mr. Dennis Miller presented his statement as the owner of unleased property located along the wellbore of the Well No. 3H, located at 6900 Meadowbrook Drive. Mr. Miller expressed his concern that he did not want to be forced to accept the terms of Chesapeake's offer to lease his land.

Also, appearing in protest were Mr. Kenneth Meisner and Mark Hixson, who represented themselves, and appeared on behalf of unleased land owners: Angela & Bernard Porter, Randall & Alice Peck, Winfred & Evelyn Wells, Sheryl & Gary White, Vicki Diane Bassham, Ed Leeds, Edward Maurice Thomas, Ermis Barber, Linda Cliburn, James & Margaret Borckert, Jack & Dorothy Morgan, Julie LaGrone, Michael & Leatta Logan, Judy Martin, Robert Bauereisen, Martha Hurm, Susan Miller, Mary Lee Blossom, Rachel Reyes, Martin & Florence Price, Kenneth Dyer, Wendy Ann Griffiths, Brenda & Charles Jordan, Roland & Debra Oliver, Mary Louise Johnson, Patricia Coleman, Tarrant Properties, Rune & Judy Aasa, and Russell Grieco.

Messrs. Meisner and Hixson testified that they protest the confiscation and taking of their mineral rights by Chesapeake Energy. Mr. Hixson and Mr. Meisner both expressed concern about Chesapeake's lack of "good faith" in applying for and receiving drilling permits on the Canucks Lease unit.<sup>1</sup> Specifically, Mr. Meisner did a review of Commission records which he contends indicates a lack of good faith by Chesapeake. Based on his review, Mr. Meisner believes that Chesapeake has a history of applying for and receiving drilling permits, and exceptions under Statewide Rule ("SWR") 37, which essentially allows Chesapeake to winnow down Protestants and then leave a small percentage of unleased mineral interest owners. Mr. Meisner argues those small percentage of unleased mineral interest owners, under an application for a SWR 37 exception, are then robbed of the opportunity to enjoy the benefits of Chesapeake's well as royalty owners, or are left with the traditional remedies of self-help by drilling their own well or of bringing an MIPA. They asserted that a grant of this Statewide Rule 37 permit would be tantamount to a reverse forced pooling of the unleased properties that lie within the envelope that describes the distance 330 feet from the perforated well path. If Chesapeake's Rule 37 exception were granted, the Protestants would consider it an involuntary appropriation of their mineral rights. Mr. Meisner requests that the Commission grant relief which compensates the unleased mineral interests owners, along the lines that were granted in the Finley case<sup>2</sup>.

#### **EXAMINERS' OPINION**

It is the basic right of every landowner or lessee to a fair and reasonable chance to recover the oil and gas under their property as recognized by the Texas Supreme Court in *Gulf Land Co. v. Atlantic Refining Co.*, 131 S.W.2d 73, 80 (Tex. 1939). Denial of that fair chance is confiscation within the meaning of Rule 37. *Id.* To obtain an exception to Statewide Rule 37 to protect correlative rights and prevent confiscation, the applicant must show that 1.) it is not possible for the applicant to recover its fair share of minerals under its tract from regular locations; and 2.) that the proposed irregular location is reasonable.

The examiners are of the opinion that approval of the Statewide Rule 37 exception requested by Chesapeake is necessary to prevent confiscation and protect correlative rights. Chesapeake and its lessors are entitled to recover their fair share of gas from beneath the Canucks Lease. "Fair share" is measured by the currently recoverable reserves beneath the lease, which in this case is 22.414

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<sup>1</sup> While it was explained to Protestants that the Commission's definition of "good faith" is a statutory legal term that applies to challenges to the right of an operator to maintain a lease, Protestants used "good faith" in laymen's terms - meaning that Chesapeake acted without good intentions.

<sup>2</sup> Oil & Gas Docket No. 09-0252373: Application of Finley Resources, Inc. for the Formation of a Unit Pursuant to the Mineral Interest Pooling Act for the Proposed East Side Unit, Newark, East (Barnett Shale) Field, Tarrant County, Texas.

BCF. The evidence shows that it is not feasible for Chesapeake to recover its fair share of gas from regular locations in the unit. The Canucks Lease Well No. 3H, at its full length of 5313 feet is projected to recover 5.721 BCF over its useful life.

The issues raised by Protestants, regarding the alleged confiscation of their mineral rights, may be remedied. First, as unleased mineral interest owners Protestants have the option of leasing their minerals to Chesapeake so that they may receive royalty payments for the recovery of their proportional share of the minerals in the Canucks Lease. Second, if the Protestants believe the terms they are being offered are not reasonable, they may file an application under the Mineral Interest Pooling Act and let the Commission determine whether they should be included in the unit. Third, the Protestants have the right to choose to lease to another operator or to seek a permit themselves and drill their own wells on their mineral property. Although the practicality of this remedy is doubtful due to the relative small size of the Protestants' tracts, it is a potentially available remedy under the law. Additionally, while Mr. Meisner requested that the Commission grant relief which compensates the unleased mineral interests owners, along the lines that were granted in the Finley case<sup>3</sup>; that remedy is unavailable in this case. That docket was heard pursuant to the Mineral Interest Pooling Act, while the present docket is a Statewide Rule 37 exception case.

The subject 3H well, as currently permitted, is subject to a NPZ restriction totaling 3478 feet in length. Given the NPZ, the effective length of the wellbore is 1835 feet, and is projected to recover 2.532 BCF. Chesapeake's proposed full wellbore length is 5313 feet, and is projected to recover 5.721 BCF of gas. The NPZ restrictions in the current permit result in the loss of 3.189 BCF of gas that would otherwise be recoverable.

The examiners find that 3.189 BCF of gas is a substantial quantity of hydrocarbons that would go unrecovered if the "no perf zone" restriction is not removed. Testimony provided indicated that failure to remove the wellbore restriction would result in the confiscation of the fair share of reserves attributable to Chesapeake and its lessors.

The examiners recommend Chesapeake be granted an exception to Statewide Rule 37 for its Well No. 3H on the 285.713 leased acres of the 304.345-acre Canucks Lease unit in Tarrant County based on prevention of confiscation. Based on the record in this docket, the examiners recommend adoption of the following Findings of Fact and Conclusions of Law:

#### **FINDINGS OF FACT**

1. At least 10 days notice of this hearing was given to the designated operator, all offset

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<sup>3</sup> Oil & Gas Docket No. 09-0252373: Application of Finley Resources, Inc. for the Formation of a Unit Pursuant to the Mineral Interest Pooling Act for the Proposed East Side Unit, Newark, East (Barnett Shale) Field, Tarrant County, Texas.

operators, all lessees of record for tracts that have no designated operator, and all owners of record of unleased mineral interests for each affected adjacent tract.

2. Chesapeake Operating, Inc. ("Chesapeake" or "Applicant"), seeks an exception to Statewide Rule 37 for the Canucks Lease, Well No. 3H, in the Newark, East (Barnett Shale) Field in Tarrant County.
3. On August 23, 2012, Chesapeake obtained a permit to drill Well No. 3H, on the 276.65 leased acres of the 304.345-acre Canucks Lease. The plat associated with that application is attached to this proposal for decision as Exhibit I, which is incorporated into this finding by reference. Chesapeake received a drilling permit on August 23, 2012 to drill its Well No. 3H on its pooled unit, which consisted of 276.651 acres at that time. The initial permit application was for a long lateral/short perf permit and was approved administratively on August 23, 2012.
4. On February 25, 2013, Chesapeake filed an amended application for Well No. 3H, which amended the unit to include new acreage to the pooled unit consisting of 283.45 acres, and amended the wellbore seeking to designate non-perf zones for the unleased portions of the wellbore. This amended permit was administratively approved March 1, 2013.
5. On April 11, 2013, Chesapeake filed a Rule 37 exception which is at issue in this docket. The plat for the current application is attached as Exhibit II.
6. On August 20, 2013, Chesapeake filed an amended Form P-12, a certificate of pooling authority, for the Canucks Lease showing that the Canucks Unit is 93.9% leased.
7. A Rule 37 exception is needed for the drilled Canucks Lease, Well No. 3H, because sections of the well proposed to be perforated are closer than 330 feet to the boundaries of certain tracts internal to the unit that are unleased.
8. Special field rules for the Newark, East (Barnett Shale) Field provide for 330 foot leaseline spacing. As to horizontal wells, where the horizontal portion of the well is cased and cemented back above the top of the Barnett Shale formation, the distance to any property line, leaseline, or subdivision line is calculated based on the distance to the nearest perforation point in the well, and not based on the penetration point or terminus. Where an external casing packer is placed in a horizontal well and cement is pumped above the external casing packer to a depth above the top of the Barnett Shale formation, the distance to any property line, leaseline, or subdivision line is calculated based on the top of the external casing packer or the closest open hole section in the Barnett Shale. The standard drilling and proration unit for the Newark, East (Barnett Shale) Field is 320 acres. An operator is permitted to form optional drilling units of 20 acres.

9. The surface location of Well No. 3H is 329 feet from the north (off lease) line and 904 feet from the east (off lease) line and 329 feet from the north line and 904 feet from the east line of the R. Collins Survey. The penetration point is 236 feet from the south lease line and 331 feet from the northwest lease line. The terminus is 153 feet from the southwest line and 277 feet from the east line of the lease and 617 feet from the north line and 1981 feet from the east line of the Jennings, SG Survey. The lateral runs on an NW-SE trend. The well was proposed to be drilled at an approximate depth of 9000 feet.
10. The Chesapeake application is opposed by some of the owners of unleased tracts internal to the Canucks Lease. The tracts are within 330 feet of the proposed lateral.
  - a. Mr. Dennis Miller owns 6900 Meadowbrook Dr., an unleased tract within the Canucks Lease.
  - b. Messrs. Meisner and Hixson appeared at the hearing representing themselves and unleased landowners within the Canucks Lease: Angela & Bernard Porter, Randall & Alice Peck, Winfred & Evelyn Wells, Sheryl & Gary White, Vicki Diane Bassham, Ed Leeds, Edward Maurice Thomas, Ermis Barber, Linda Cliburn, James & Margaret Borckert, Jack & Dorothy Morgan, Julie LaGrone, Michael & Leatta Logan, Judy Martin, Robert Bauereisen, Martha Hurm, Susan Miller, Mary Lee Blossom, Rachel Reyes, Martin & Florence Price, Kenneth Dyer, Wendy Ann Griffiths, Brenda & Charles Jordan, Roland & Debra Oliver, Mary Louise Johnson, Patricia Coleman, Tarrant Properties, Rune & Judy Aasa, and Russell Grieco.
11. Protestants Meisner and Hixson believe that if Chesapeake's Rule 37 exception were granted, it would be tantamount to an involuntary appropriation of the mineral rights of unleased parties.
12. The Barnett Shale formation is present and productive under the entirety of the Canucks Lease.
13. At the time of the hearing, the leased acreage in the Canucks Lease had increased to 285.713 acres. The Canucks Lease unit contains a total of 304.345 acres within its boundaries and is 93.9 percent leased.
14. To establish the currently recoverable reserves under the 285.713 leased acres of the 304.345 Canucks Unit, Chesapeake used a volumetric calculation:
  - a. Available well logs in the vicinity of the Canucks Lease indicate the thickness of the Barnett Shale locally to be 340 feet.

- b. A study conducted by Devon Energy Production Co., LLP for the Tarrant/Denton/Wise County calculated original gas in place at 139 BCF per square mile in those counties, based on an average formation thickness of 433 feet. Using that study, and correcting for the thickness of the Newark, East (Barnett Shale) Field under the Canucks Lease and the leased acreage, and assuming a recovery factor of 46%, Chesapeake calculated the original gas in place to be 22.414 BCF of recoverable gas beneath the Canucks Lease.
15. Chesapeake reviewed the Newark, East (Barnett Shale) Field wells within a 3-mile radius of the proposed well, finding 108 wells within that radius. Plotting the estimated ultimate recovery (EUR) of each of the wells, Chesapeake developed a scatter diagram and used a least squares regression method to produce a trend line to predict the ultimate recovery of a well in the area based on its length. Based on the scatter diagram, with the drainhole length as the “x” axis and the estimated EUR in MMCF as the “y” axis, Chesapeake derived a well recovery formula of “ $y = 0.917x + 849.3$ ”. This indicates that each incremental foot of horizontal wellbore will recover an additional 917 MCF of gas, while a purely vertical well would recover approximately 850 MMCF. Thus, the proposed full-length lateral of 5313 feet should recover 5.721 BCF of gas.
16. The subject 3H well is subject to an NPZ restriction totaling 3478 feet.
  - a. Under the previously granted permit, the regular and effective length of the wellbore of Well No. 3H is 1835 feet, which is projected to recover 2.532 BCF.
  - b. The full wellbore without an NPZ would be 5313 feet, and is projected to recover 5.721 BCF of gas.
  - c. The NPZ restrictions result in the inability to recover 3.189 BCF of gas that would otherwise be recoverable.
17. The amount of gas that would go unrecovered absent removal of the 3478 feet of NPZ, 3.189 BCF, is a significant quantity of hydrocarbons.
18. Chesapeake’s fair share of gas in place beneath the Canucks lease is 22.414 BCF of gas.
19. Chesapeake’s other existing and permitted well (Well No. 1) on the Canucks unit will recover 2.915 BCF of gas. Granting the requested Rule 37 exception for the Canucks Well No. 3H will allow Chesapeake and its lessors to recover more of their fair share of hydrocarbons under the pooled unit.
20. The drilled location of the Canucks Lease Well No. 3H is reasonable.

- a. Based on 500 foot well spacing, the Canucks Lease will accommodate three wells.
- b. If the location of the Canucks Lease Well No. 3H were moved to the northeast, it would interfere with the recoveries of Well Nos. 1H and 2H.

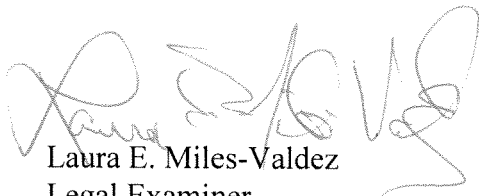
**CONCLUSIONS OF LAW**


- 1. Proper notice of hearing was timely given to all persons legally entitled to notice.
- 2. All things have occurred to give the Commission jurisdiction to decide this matter.
- 3. Approval of a Rule 37 exception for removal of the NPZ currently part of the drilling permit for the drilled location of the Canucks Lease, Well No. 3H, as proposed by Chesapeake Operating, Inc. is necessary to prevent confiscation and protect the correlative rights of the mineral owners.

**RECOMMENDATION**

The examiners recommend the application of Chesapeake Operating, Inc., for a Statewide Rule 37 exception removing the NPZ for the drilled location of the Canucks Lease, Well No. 3H in the Newark, East (Barnett Shale) Field, Tarrant County, be granted as necessary to prevent confiscation.

Respectfully submitted,

  
Laura E. Miles-Valdez  
Legal Examiner

  
Paul Dubois  
Technical Examiner



CANUCKS SQUARE	NORTHING (NAD27)	EASTING (NAD27)	LATITUDE (NAD 27)	LONGITUDE (NAD 27)	NORTHING (NAD83)	EASTING (NAD83)	LATITUDE (NAD 83)	LONGITUDE (NAD 83)	UNIT LINE		SURVEY LINE	
SURFACE HOLE (SHL)	387233.7	2068158.2	32.756231	87.208888	0661271.3	2364868.1	32.756362	87.210280	1612'EW		320'S	904'E
KICK OFF POINT/POINT OF PENETRATION (KOP/KPOP)	384797.3	2067232.6	32.761301	87.216256	0666726.6	2363057.6	32.761432	87.218646	777'N	378'W	617'N	67'E
PROPOSED UPPER PERFORATION POINT (PUPP)	383287.0	2066142.2	32.747363	87.210058	0667324.7	2364860.6	32.747814	87.210347	1348'N	1047'E	1134'S	863'E
PROPOSED LOWER PERFORATION POINT (LUPP)	383186.6	2066364.3	32.747113	87.208370	0667228.5	2366223.7	32.747244	87.208981	1121'N	1034'E	1038'S	850'E
BOTTOM HOLE LOCATION (BL)	383162.2	2066477.0	32.747010	87.208866	0667163.0	2366316.6	32.747141	87.208259	968'N	938'E	1002'S	556'E
POINT OF INTERSECTION	383787.1	2067975.0	32.749884	87.213846								

TOTAL LEASED ACREAGE	276.651
TOTAL UNLEASED ACREAGE	28.890
TOTAL UNIT ACREAGE	305.541

S37°18'53"W  
3,177.14'  
SHL TO KOP

CANUCKS —  
3H KOP/POP

S38°00'25"  
1,206.07'  
KOP TO P

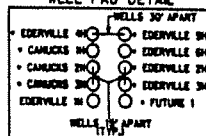
S68°03'57"E  
1.258.50'  
P1 TO PUPP

S68°03'57"E —  
260.92'  
PUPP TO PLPP












S68°03'57"E—  
100.00'  
PLPP TO BHL

LANCASTER 1H-

WELL PAD DETAIL



### LEGEND

-  DASHED LINE  
 SMOO BUBBLE  
 UNIT LINE  
 NON LEASED TRACTS  
 LEASED TRACTS  
 NON LEASED  
 APPROXIMATE ABSTRACT LINE  
 NON LEASED  
 POWER STRIPS AND CORERS OUT TO ORIGINAL  
 CORNER, ALLIANCE STREET  
 NORTH OF LAYS ON PROPERTY LINE

**with**

[illegible]

08-16-2012



# Exhibit I

**CANUCKS 3H WELL EXHIBIT  
IN THE  
TARRANT COUNTY, TEXAS  
FOR  
CHESAPEAKE OPERATING, INC.**

DATED: 8/16/2012  
BY:



**HALFF**

HALFF ASSOCIATES INC., ENGINEERS ~ SURVEYORS  
1201 NORTH BOWSER ROAD ~ RICHARDSON, TEXAS ~ 75081-2275  
SCALE: 1"=800' (214)346-6200 AVO. 26724

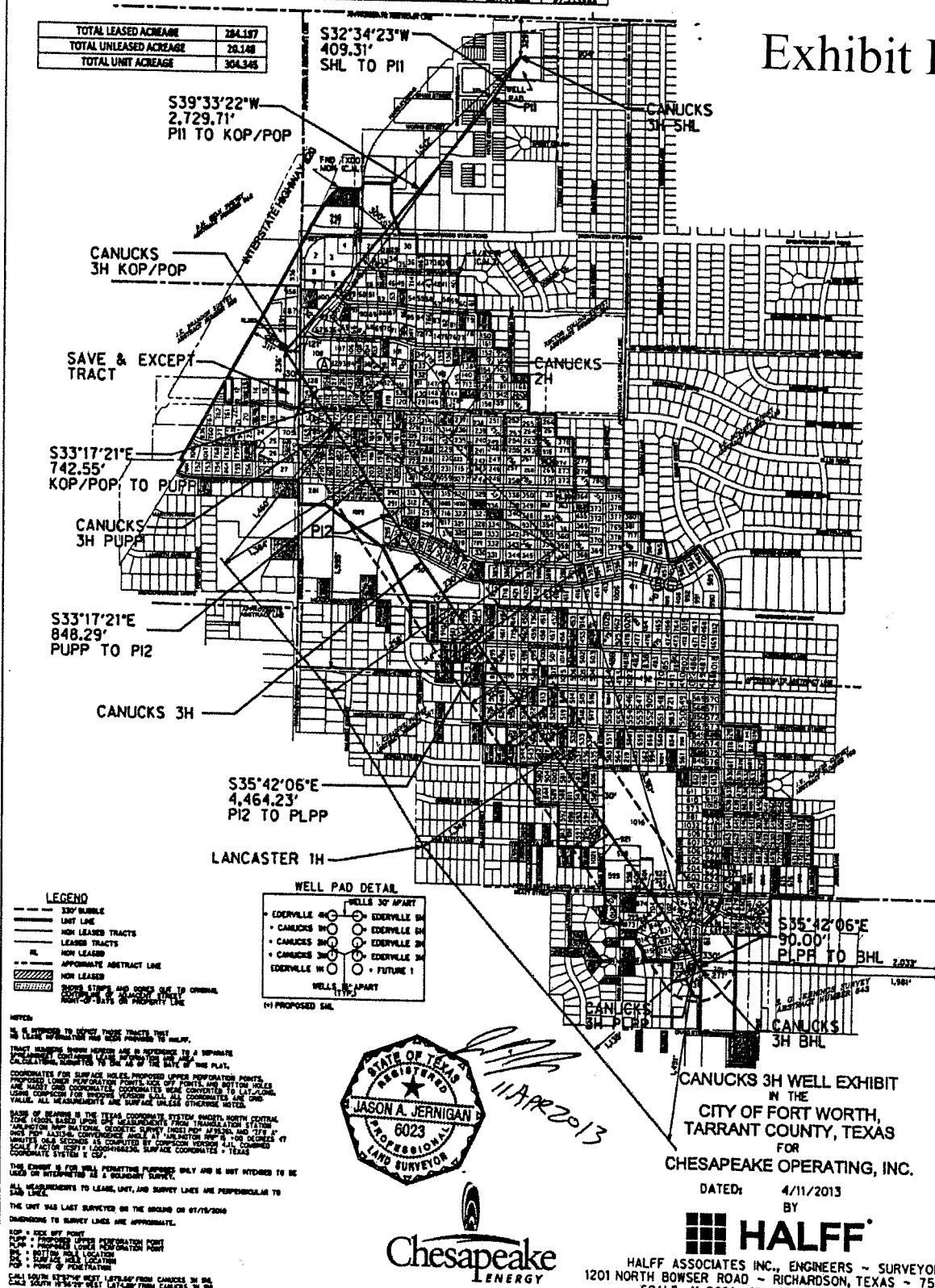
SCALE: 1"=800'



CANNICKS 3H WELL	NORTHING (NAD83)	EASTING (NAD83)	LATITUDE (NAD 83)	LONGITUDE (NAD 83)	NORTHING (NAD83)	EASTING (NAD83)	LATITUDE (NAD 83)	LONGITUDE (NAD 83)	UNIT LINE	SURVEY LINE
SURFACE HOLE (SH)	187228.7	2088158.2	31.788281	97.308969	6961371.3	2864899.1	32.758542	97.210260	1512'SW	328'N
EDGE OFF POINT/ PENETRATION POINT (KOP)/(POP)	394784.5	2087199.7	31.781514	97.216382	6958808.8	2349304.1	32.751644	97.216682	234'S	811'NW
PROPOSED UPPER PERFORATION POINT (PUPP)	394188.9	2087607.2	31.749808	97.215041	6968198.9	2368437.5	32.748985	97.215832	230'WN	534'SW
PROPOSED LOWER PERFORATION POINT (PUPP)	398630.2	2086777.8	31.737869	97.208084	6958882.6	2346848.9	32.739000	97.208388	168'SW	230'E
BOTTOM HOLE LOCATION (BHL)	286767.1	2080790.0	31.737667	97.204934	6963810.0	2868802.1	32.757798	97.208215	158'SW	277'E
POINT OF INTERSECTION (PI)	NORTHING (NAD83)	EASTING (NAD83)	LATITUDE (NAD 83)	LONGITUDE (NAD 83)						
PI1	256838.8	2088887.8	31.757285	97.210686						
PI2	258454.8	2088072.7	31.747852	97.213382						

TOTAL LEASED ACREAGE	284.197
TOTAL UNLEASED ACREAGE	20.148
TOTAL UNIT ACREAGE	304.345

## Exhibit II



3. CANUCKS 3H WELL EXHIBIT  
IN THE  
CITY OF FORT WORTH,  
TARRANT COUNTY, TEXAS  
FOR  
CHESAPEAKE OPERATING, INC.

DATED: 4/11/2013

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HALFF ASSOCIATES INC., ENGINEERS ~ SURVEYORS  
1201 NORTH BOWSER ROAD ~ RICHARDSON, TEXAS ~ 75081-2275  
SCALE: 1"=800' (214) 346-6200 AVO. 26724

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